

CE

MADE  
IN  
USA

# User's Guide



Shop on line at

**omega.com®**

ΩMEGA®

[www.omega.com](http://www.omega.com)  
*e-mail:* [info@omega.com](mailto:info@omega.com)

**DPF700**  
**Dual Relay Option Board**  
**for the DPF700 Meter**

**omega.com**®

ΩOMEGA®

**OMEGAnet® On-Line Service**  
[www.omega.com](http://www.omega.com)

**Internet e-mail**  
[info@omega.com](mailto:info@omega.com)

### **Servicing North America:**

**USA:**  
ISO 9001 Certified

One Omega Drive, P.O. Box 4047  
Stamford CT 06907-0047  
TEL: (203) 359-1660                    FAX: (203) 359-7700  
e-mail: [info@omega.com](mailto:info@omega.com)

**Canada:**

976 Berger  
Laval (Quebec) H7L 5A1  
TEL: (514) 856-6928                    FAX: (514) 856-6886  
e-mail: [info@omega.ca](mailto:info@omega.ca)

### **For immediate technical or application assistance:**

**USA and Canada:**

Sales Service: 1-800-826-6342 / 1-800-TC-OMEGA®  
Customer Service: 1-800-622-2378 / 1-800-622-BEST®  
Engineering Service: 1-800-872-9436 / 1-800-USA-WHEN®

**Mexico and  
Latin America:**

TEL: (001)800-TC-OMEGA®                    FAX: (001) 203-359-7807  
En Español: (001) 203-359-7803  
e-mail: [espanol@omega.com](mailto:espanol@omega.com)

### **Servicing Europe:**

**Benelux:**

Postbus 8034, 1180 LA Amstelveen, The Netherlands  
TEL: +31 20 3472121                    FAX: +31 20 6434643  
Toll Free in Benelux: 0800 0993344  
e-mail: [sales@omegaelang.nl](mailto:sales@omegaelang.nl)

**Czech Republic:**

Frystatska 184, 733 01 Karviná  
TEL: +420 59 6311899                    FAX: +420 59 6311114  
e-mail: [info@omegashop.cz](mailto:info@omegashop.cz)

**France:**

11, rue Jacques Cartier, 78280 Guyancourt  
TEL: +33 1 61 37 29 00                    FAX: +33 1 30 57 54 27  
Toll Free in France: 0800 466 342  
e-mail: [sales@omega.fr](mailto:sales@omega.fr)

**Germany/Austria:**

Daimlerstrasse 26, D-75392 Deckenpfronn, Germany  
TEL: +49 7056 9398-0                    FAX: +49 7056 9398-29  
Toll Free in Germany: 0800 639 7678  
e-mail: [info@omega.de](mailto:info@omega.de)

**United Kingdom:**  
ISO 9002 Certified

One Omega Drive  
River Bend Technology Centre  
Northbank, Irwell Manchester M44 5BD United Kingdom  
TEL: +44 161 777 6611                    FAX: +44 161 777 6622  
Toll Free in England: 0800 488 488  
e-mail: [sales@omega.co.uk](mailto:sales@omega.co.uk)

It is the policy of OMEGA to comply with all worldwide safety and EMC/EMI regulations that apply. OMEGA is constantly pursuing certification of its products to the European New Approach Directives. OMEGA will add the CE mark to every appropriate device upon certification.

The information contained in this document is believed to be correct, but OMEGA Engineering, Inc. accepts no liability for any errors it contains, and reserves the right to alter specifications without notice.

**WARNING:** These products are not designed for use in, and should not be used for, patient-connected applications.

This device is marked with the international caution symbol. It is important to read the Setup Guide before installing or commissioning this device as the guide contains important information relating to safety and EMC.



This device is marked with the international caution symbol. It is important to read the Setup Guide before installing or commissioning this device as the guide contains important information relating to safety and EMC.



---

## PREFACE

### MANUAL OBJECTIVES

This manual shows you how to install and use the Dual-Relay option board with the DPF700 meter.

In this manual we provide procedures for:

- \* Setting up the Dual-Relay option board
- \* Installing the Dual-Relay option board

Use this manual with you DPF700 manual (M1676)

### NOTES and CAUTIONS

Information that is especially important to note is identified by these labels:

- **NOTE**
- **WARNING**
- **CAUTION**
- **IMPORTANT**



**NOTE:** provides you with information that is important to successfully setup and use the Programmable Digital Meter.



**CAUTION or WARNING:** tells you about the risk of electric shock.



**CAUTION, WARNING or IMPORTANT:** tells you of circumstances or practices that can effect the meter's functionality and must refer to accompanying documents



---

## TABLE OF CONTENTS

|  |   |
|--|---|
| 1.1 UNPACKING .....                                | 1 |
| 1.2 SAFETY CONSIDERATIONS .....                    | 1 |
| 2.1 INSTALLING THE DUAL-RELAY OPTION BOARD .....   | 2 |
| 2.2 SETTING UP THE DUAL-RELAY OPTION BOARD .....   | 3 |
| 2.3 ELECTRICAL CONNECTION .....                    | 5 |
| 3.1 RELAY OUTPUT OPTION BOARD SPECIFICATIONS ..... | 6 |

### FIGURES

|  |   |
|--|---|
| 2.1 DUAL RELAY OPTION BOARD .....                | 2 |
| 2.2 SETPOINT EXAMPLE ILLUSTRATION .....          | 4 |
| 2.3 ELECTRICAL WIRING FOR RELAY CONNECTION ..... | 5 |
| 2.4 DUAL RELAY CONNECTIONS .....                 | 5 |

### TABLES

|                            |   |
|----------------------------|---|
| 2.1 SETPOINT EXAMPLE ..... | 3 |
|----------------------------|---|

## 1.1 UNPACKING

Remove the Packing List and verify that all equipment has been received. If there are any questions about the shipment, use the phone number for the Customer Service Department nearest you.

Upon receipt of shipment, inspect the container and equipment for any signs of damage. Take particular note of any evidence of rough handling in transit. Immediately report any damage to the shipping agent.

**Note**  *The carrier will not honor any claims unless all shipping material is saved for their examination. After examining and removing contents, save packing material and carton in the event reshipment is necessary.*

## 1.2 SAFETY CONSIDERATIONS

Refer to your main owners guide manual for complete safety considerations.

 This option card is intended for use in a DPF700 panel mount device that is protected in accordance with **Class I** of EN 61010 (115/230 AC power connections). Installation of this instrument should be done by Qualified personnel.

**Note** 

- Do not exceed voltage rating on the label located on the top of the instrument housing.
- Always disconnect power before changing signal and power connections.
- Do not use this instrument on a work bench without its case for safety reasons.
- Do not operate this instrument in flammable or explosive atmospheres.
- Do not expose this instrument to rain or moisture.
- Unit mounting should allow for adequate ventilation to ensure instrument does not exceed operating temperature rating.
- Use electrical wires with adequate size to handle mechanical strain and power requirements. Install without exposing bare wire outside the connector to minimize electrical shock hazards.

## 2.1 INSTALLING THE DUAL-RELAY OPTION BOARD

To install the dual-relay option board, follow these steps (refer to the Figure 2-1):

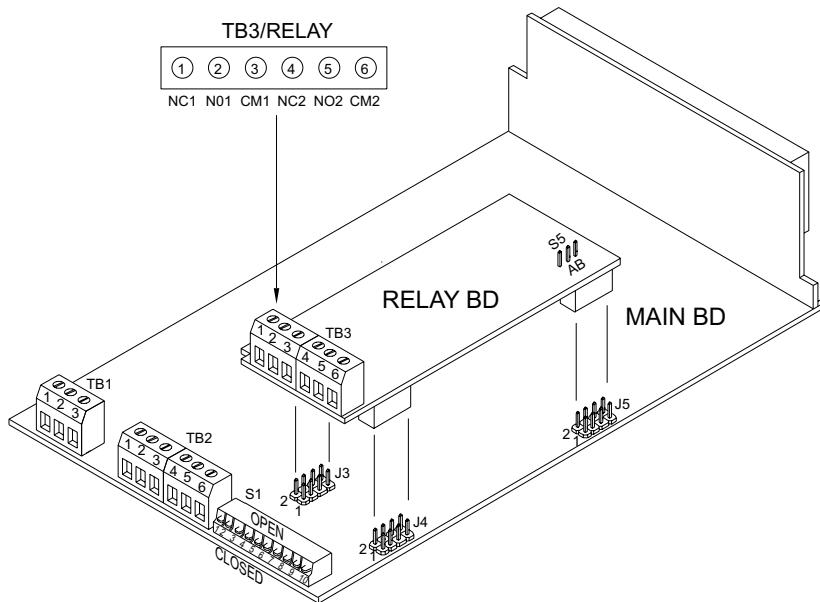


**CAUTION: The meter has no power-on switch, so it will be in operation as soon as you apply power.**



**IMPORTANT: Disconnect the power from the unit before installing this option board.**

1. Hold the board in a horizontal position, with the TB3 connector facing towards the rear of the meter.
2. Line up the 3 connectors located on the back side of the board with pin groups J3, J4 and J5 on the mother card.
3. Push connectors down to secure on relay board.



**Figure 2-1. Dual-Relay Option Board**

## 2.2 SETTING UP THE DUAL-RELAY OPTION BOARD

You may enter a setpoint from -99999 to 999999 with a decimal point in any of the following positions: 9.9.9.9.9.9. After applying the scale factor and offset, the displayed measurement is compared to the setpoint values.

### **LO ALARM**

Displayed value is less than Setpoint LO

### **HI ALARM**

Displayed value is more than Setpoint HI

### **HYSTERESIS**

Relay 2 is energized when display value is more than Setpoint HI. Relay 2 is not energized when display value is less than Setpoint LO

*Setpoint Example:*

*Setpoint HI is 500.0 and Setpoint LO is 100.0.*

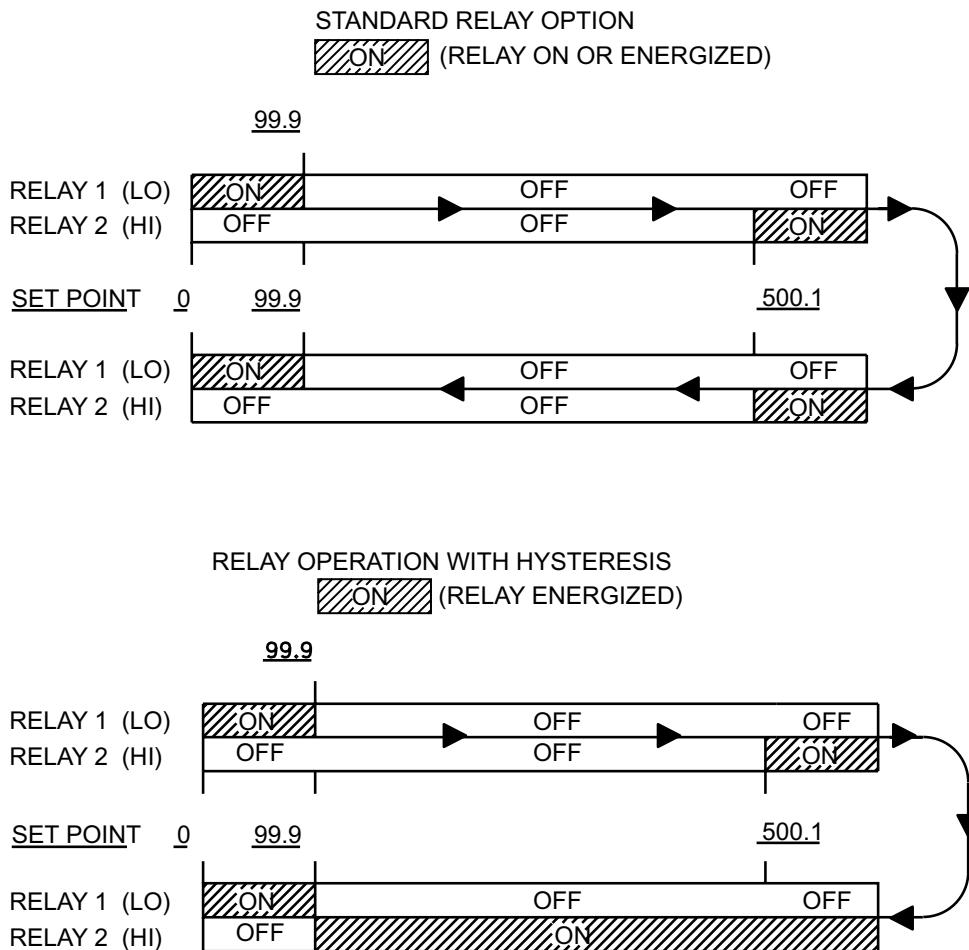
*Reading changes from 0 to 600 and back to 0.*

*Figure 10-2 on the following page illustrates Table 2-1.*

**Table 2-1. Setpoint Example**

| <b>Reading</b> | <b>Alarm Status</b> |                     |            |
|----------------|---------------------|---------------------|------------|
|                | <b>LO (Relay 1)</b> | <b>HI (Relay 2)</b> | <b>HYS</b> |
| 0              | On                  | Off                 | Off        |
| 99.9           | Off                 | Off                 | Off        |
| 300            | Off                 | Off                 | Off        |
| 500.0          | Off                 | Off                 | Off        |
| 500.1          | Off                 | On                  | On         |
| 600            | Off                 | On                  | On         |
| 500.1          | Off                 | Off                 | On         |
| 100 - 500      | Off                 | Off                 | On         |
| 99.9           | On                  | Off                 | Off        |
| 0              | On                  | Off                 | Off        |

## 2.2 SETTING UP THE DUAL-RELAY BOARD (Continued)



**Figure 2-2. Setpoint Example Illustration**

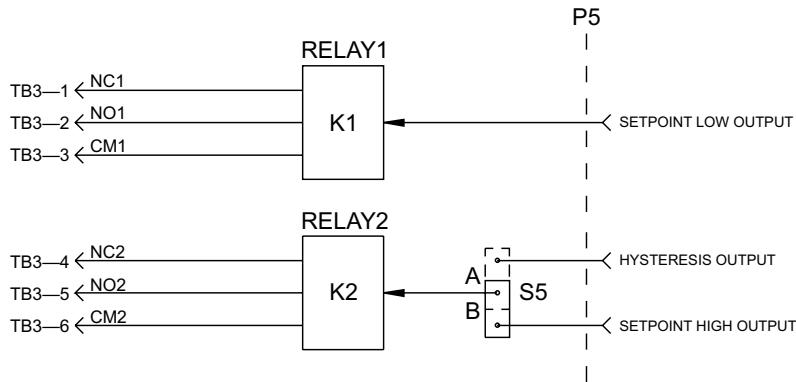
To convert Setpoint LO to a second high setpoint, set software switch 3 of the configuration menu to 1 (**ConFIG = XX1XXX**). LO ALARM becomes active when the reading is greater (more positive) than that setpoint.

To convert both setpoints to latched setpoints, set software switch 2 of the configuration menu to 1 (**ConFIG = X1XXXX**). When relays are energized, they stay energized until a Reset (either front-panel or back connector reset).

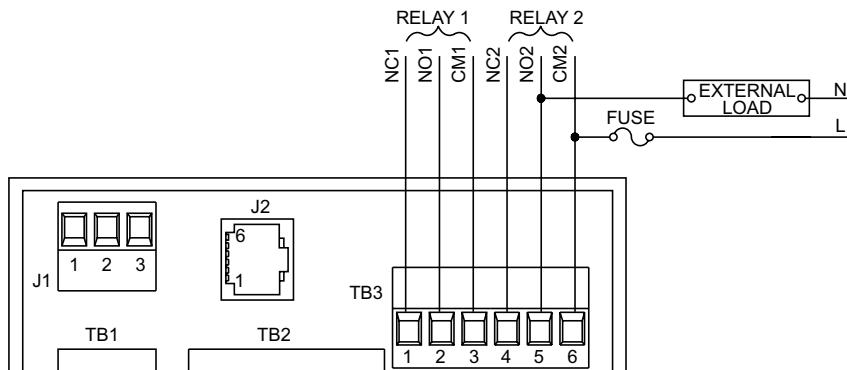
## 2.3 ELECTRICAL CONNECTION AND SPECIFICATION

Each relay has a form C contact. Refer to Figure 2-1 and Figure 2-3 to locate contacts and S5 switch.

- \* Install S5-A to control Relay 2 with hysteresis action.
- \* Install S5-B to control Relay 2 with setpoint HI.
- \* TB3-1 is a normally closed contact of relay 1.
- \* TB3-2 is a normally open contact of relay 1.
- \* TB3-3 is a common contact of relay 1.
- \* TB3-4 is a normally closed contact of relay 2.
- \* TB3-5 is a normally open contact of relay 2.
- \* TB3-6 is a common contact of relay 2.



**Figure 2-3. Electrical Wiring for Relay Connections**



**Figure 2-4. Dual-Relay Connections**

### **3.1 RELAY OUTPUT OPTION BOARD SPECIFICATIONS**

2 Form "C" on/off relays.

Configurable for latched and unlatched by software.

Max Current: 5 Amps, resistive load.

Max Voltage: 250 Vac or 28 Vdc

## **NOTES**



## WARRANTY/DISCLAIMER

OMEGA ENGINEERING, INC. warrants this unit to be free of defects in materials and workmanship for a period of 13 months from date of purchase. OMEGA Warranty adds an additional one (1) month grace period to the normal one (1) year product warranty to cover handling and shipping time. This ensures that OMEGA's customers receive maximum coverage on each product.

If the unit should malfunction, it must be returned to the factory for evaluation. OMEGA's Customer Service Department will issue an Authorized Return (AR) number immediately upon phone or written request. Upon examination by OMEGA, if the unit is found to be defective it will be repaired or replaced at no charge. OMEGA's WARRANTY does not apply to defects resulting from any action of the purchaser, including but not limited to mishandling, improper interfacing, operation outside of design limits, improper repair, or unauthorized modification. This WARRANTY is VOID if the unit shows evidence of having been tampered with or shows evidence of being damaged as a result of excessive corrosion; or current, heat, moisture or vibration; improper specification; misapplication; misuse or other operating conditions outside of OMEGA's control. Components which wear are not warranted, including but not limited to contact points, fuses, and triacs.

**OMEGA is pleased to offer suggestions on the use of its various products. However, OMEGA neither assumes responsibility for any omissions or errors nor assumes liability for any damages that result from the use of its products in accordance with information provided by OMEGA, either verbal or written. OMEGA warrants only that the parts manufactured by it will be as specified and free of defects. OMEGA MAKES NO OTHER WARRANTIES OR REPRESENTATIONS OF ANY KIND WHATSOEVER, EXPRESSED OR IMPLIED, EXCEPT THAT OF TITLE, AND ALL IMPLIED WARRANTIES INCLUDING ANY WARRANTY OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE HEREBY DISCLAIMED. LIMITATION OF LIABILITY:** The remedies of purchaser set forth herein are exclusive and the total liability of OMEGA with respect to this order, whether based on contract, warranty, negligence, indemnification, strict liability or otherwise, shall not exceed the purchase price of the component upon which liability is based. In no event shall OMEGA be liable for consequential, incidental or special damages

**CONDITIONS:** Equipment sold by OMEGA is not intended to be used, nor shall it be used: (1) as a "Basic Component" under 10 CFR 21 (NRC), used in or with any nuclear installation or activity; or (2) in medical applications or used on humans. Should any Product(s) be used in or with any nuclear installation or activity, medical application, used on humans, or misused in any way, OMEGA assumes no responsibility as set forth in our basic WARRANTY/DISCLAIMER language, and additionally, purchaser will indemnify OMEGA and hold OMEGA harmless from any liability or damage whatsoever arising out of the use of the Product(s) in such a manner.

## RETURN REQUESTS / INQUIRIES

Direct all warranty and repair requests/inquiries to the OMEGA Customer Service Department. BEFORE RETURNING ANY PRODUCT(S) TO OMEGA, PURCHASER MUST OBTAIN AN AUTHORIZED RETURN (AR) NUMBER FROM OMEGA'S CUSTOMER SERVICE DEPARTMENT (IN ORDER TO AVOID PROCESSING DELAYS). The assigned AR number should then be marked on the outside of the return package and on any correspondence.

The purchaser is responsible for shipping charges, freight, insurance and proper packaging to prevent breakage in transit.

FOR WARRANTY RETURNS, please have the following information available BEFORE contacting OMEGA:

1. P.O. number under which the product was PURCHASED,
2. Model and serial number of the product under warranty, and
3. Repair instructions and/or specific problems relative to the product.

FOR NON-WARRANTY REPAIRS, consult OMEGA for current repair charges. Have the following information available BEFORE contacting OMEGA:

1. P.O. number to cover the COST of the repair,
2. Model and serial number of product, and
3. Repair instructions and/or specific problems relative to the product.

OMEGA's policy is to make running changes, not model changes, whenever an improvement is possible. This affords our customers the latest in technology and engineering.

OMEGA is a registered trademark of OMEGA ENGINEERING, INC.

© Copyright 2003 OMEGA ENGINEERING, INC. All rights reserved. This document may not be copied, photocopied, reproduced, translated, or reduced to any electronic medium or machine-readable form, in whole or in part, without prior written consent of OMEGA ENGINEERING, INC.

**PATENT NOTICE:** The "Meter Case Bezel Design" is a trademark of NEWPORT Electronics, Inc., registered in the U.S. USED UNDER LICENSE. This product is covered by one or more of the following patents: U.S. Pat. No. Des. 336,895; 5,274,577 / CANADA 2052599; 2052600 / ITALY 1249456; 1250938 / FRANCE BREVET No. 91 12756 / SPAIN 2039150; 2048066 / UK PATENT No. GB2 249 837; GB2 248 954 / GERMANY DE 41 34398 C2. OTHER INTERNATIONAL PATENTS PENDING.

# **Where Do I Find Everything I Need for Process Measurement and Control? OMEGA...Of Course!**

***Shop on line at [www.omega.com](http://www.omega.com)***

## **TEMPERATURE**

- Thermocouple, RTD & Thermistor Probes, Connectors, Panels & Assemblies
- Wire: Thermocouple, RTD & Thermistor
- Calibrators & Ice Point References
- Recorders, Controllers & Process Monitors
- Infrared Pyrometers

## **PRESSURE, STRAIN AND FORCE**

- Transducers & Strain Gauges
- Load Cells & Pressure Gauges
- Displacement Transducers
- Instrumentation & Accessories

## **FLOW/LEVEL**

- Rotameters, Gas Mass Flowmeters & Flow Computers
- Air Velocity Indicators
- Turbine/Paddlewheel Systems
- Totalizers & Batch Controllers

## **pH/CONDUCTIVITY**

- pH Electrodes, Testers & Accessories
- Benchtop/Laboratory Meters
- Controllers, Calibrators, Simulators & Pumps
- Industrial pH & Conductivity Equipment

## **DATA ACQUISITION**

- Data Acquisition & Engineering Software
- Communications-Based Acquisition Systems
- Plug-in Cards for Apple, IBM & Compatibles
- Datalogging Systems
- Recorders, Printers & Plotters

## **HEATERS**

- Heating Cable
- Cartridge & Strip Heaters
- Immersion & Band Heaters
- Flexible Heaters
- Laboratory Heaters

## **ENVIRONMENTAL MONITORING AND CONTROL**

- Metering & Control Instrumentation
- Refractometers
- Pumps & Tubing
- Air, Soil & Water Monitors
- Industrial Water & Wastewater Treatment
- pH, Conductivity & Dissolved Oxygen Instruments